

Ales and Sales: The Correlation between Breweries and Kroger's Stock Price

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ABSTRACT

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Craft beer craze or correlation phase? This study delves into the relationship between the number of breweries in the United States and the stock price of Kroger (KR). Using data from the Brewers Association and LSEG Analytics (Refinitiv), our research team conducted a comprehensive analysis spanning from 2002 to 2022. Surprisingly, we discovered a strong correlation coefficient of 0.8767014, with a statistically significant p-value of less than 0.01. Our findings suggest that there may be a brew-tiful link between the proliferation of breweries and the performance of Kroger's stock. This research offers a hop-portunity for further exploration into the influence of craft beer on market dynamics. Cheers to uncovering unconventional correlations in the world of finance!

Keywords:

breweries, Kroger stock price, correlation, craft beer, market dynamics, stock performance, United States breweries, Brewers Association, LSEG Analytics, Refinitiv, correlation coefficient, p-value, market analysis

I. Introduction

INTRODUCTION

The relationship between seemingly unrelated variables has long fascinated researchers in various fields. From the classic example of the correlation between ice cream sales and shark attacks to the more recent investigation into the connection between avocado prices and millennial homeownership, unconventional correlations continue to pique the interest of scholars and practitioners alike. In this study, we turn our attention to a seemingly incongruous pair - the number of breweries in the United States and the stock price of Kroger (KR).

The craft beer industry in the United States has experienced an unprecedented boom over the past few decades, leading to a significant increase in the number of breweries nationwide. Meanwhile, Kroger, one of the largest supermarket chains in the country, has navigated the turbulent waters of the stock market with varying degrees of success. Despite their disparate domains, our curiosity was piqued by the possibility of a link between the proliferation of breweries and the financial performance of Kroger.

This paper aims to address this gap in the literature by exploring the potential correlation between these two seemingly unrelated trends. Our analysis spans a twenty-year period, from 2002 to 2022, drawing on data from the Brewers Association and LSEG Analytics (Refinitiv). Through rigorous statistical analysis, we uncover a remarkably strong correlation coefficient of 0.8767014, accompanied by a p-value of less than 0.01. These findings challenge conventional wisdom and raise the foam-tastic prospect of an unexpected relationship between craft beer production and the stock market.

While our initial investigation reveals a compelling correlation, we refrain from making causal claims at this juncture. Instead, we invite further inquiry into the mechanisms that may underlie this brew-tiful link and the potential implications for both the craft beer industry and the world of finance. By shedding light on this uncharted territory, our research opens a refreshing tap of inquiry into the interplay between consumer trends, market behavior, and investment outcomes. It's time to raise a glass to the notion that sometimes, the most unexpected pairings can yield the most surprising insights.

So, as we embark on this sudsy journey into the world of craft beer and stock prices, let us toast to the notion that in the realm of financial analysis, truth can sometimes be stranger than fiction. Cheers to uncovering unconventional correlations in the world of finance!

II. Literature Review

Smith and Doe (2007) thoroughly investigated the dynamics of consumer behavior and its impact on stock prices, delving into intricate relationships that were previously overlooked. Their work shed light on the interconnectedness of seemingly disparate industries, offering a thought-provoking exploration of market fluctuations. While their research primarily focused on traditional consumer goods, their findings paved the way for a broader consideration of unconventional correlations. Jones (2015) further expanded on this theme, drawing attention to the influence of evolving consumer preferences on investment patterns. The authors' insights into the unpredictable nature of market dynamics provided a compelling impetus for exploring unorthodox relationships that transcend conventional economic paradigms.

Turning our attention to the world of craft beer and supermarkets, "Craft Beer and You: A Consumer's Guide" by Brewer and Hophead (2018) offers valuable perspectives on the burgeoning craft beer industry. The book eloquently captures the essence of craft beer culture, highlighting the proliferation of breweries across the United States and the evolving tastes of consumers. While not a traditional economic treatise, the book inadvertently provides anecdotal evidence for the potential impact of craft beer on consumer spending patterns in related industries.

In a similar vein, fictional narratives such as "Brewing Up Trouble: A Kroger Mystery" by Ale Sleuth (2020) present a light-hearted yet intriguing exploration of supermarket intrigue within the context of the craft beer craze. While the book's primary focus may lie in entertainment, it undeniably reflects an undercurrent of societal fascination with the intersection of consumer trends and retail giants. Furthermore, the timeless classic "Ales, Sales, and the Stock Exchange" by Malt Dancer (1965)—a work of fiction predating the craft beer explosion—offers whimsical insights into the speculative nature of market forces, albeit in a more metaphorical sense.

In the realm of internet culture, the "Kroger Pepe" meme has intermittently graced various online forums, humorously juxtaposing the supermarket chain with unlikely scenarios. Though lighthearted in nature, the meme inadvertently underscores the public's enduring fascination with the unexpected and the unconventional, mirroring our own scholarly pursuit of unorthodox correlations.

In summary, while the literature on the correlation between the number of breweries in the United States and Kroger's stock price may initially appear sparse, a closer examination reveals a rich tapestry of tangentially related works that prompt contemplation and spark curiosity in unexpected ways. These diverse sources, ranging from the serious to the whimsical, collectively

underscore the importance of delving into uncharted territory and embracing the possibility of uncovering hoptimistic discoveries.

III. Methodology

METHODOLOGY

To unravel the potential relationship between the number of breweries in the United States and the stock price of Kroger (KR), our research team embarked on a methodical exploration employing quantitative and statistical analyses. Our investigation sought to quench the thirst for knowledge regarding this seemingly improbable correlation.

Data Collection:

The first step in our journey involved obtaining data from reliable sources. We collected information on the number of breweries in the United States from the Brewers Association, which provided a comprehensive dataset spanning the years 2002 to 2022. To measure Kroger's stock performance, we procured historical stock prices from LSEG Analytics (Refinitiv) for the corresponding period. In the spirit of thoroughness, we meticulously sifted through a myriad of datasets, leaving no keg unturned in our pursuit of robust and representative data.

Variable Definitions:

In this scholarly pursuit of suds and stocks, it was crucial to define our variables with precision. The independent variable, "Number of Breweries," represented the evolving landscape of craft beer production, reflecting industry trends and consumer preferences. Meanwhile, the dependent

variable, "Kroger Stock Price (KR)," encapsulated the market valuation of this prominent supermarket chain, embodying the ebb and flow of investor sentiment and financial performance.

Statistical Analyses:

With our data in hand, we set out to employ an arsenal of statistical methods to uncover any underlying correlations. We applied Pearson's correlation coefficient to quantify the strength and direction of association between the number of breweries and Kroger's stock price. This classic statistical tool allowed us to elicit insights into potential links between these seemingly incongruous phenomena.

Moreover, we conducted time series analysis to discern temporal patterns and fluctuations within the datasets. By scrutinizing the dynamics of brewery proliferation and stock price movements over the two-decade period, we endeavored to extract nuanced observations embedded within the temporal tapestry of our data.

A Multivariate approach:

Recognizing the multifaceted nature of market dynamics, our analysis also incorporated a multivariate regression model to assess the impact of additional economic and industry factors on Kroger's stock price. In this endeavor, we sought to disentangle the influence of brewery counts from the broader array of market forces, including macroeconomic indicators and sector-specific variables.

Confounder Consideration:

Acknowledging the potential for confounding variables to muddle our inferences, we exercised caution to identify and account for extraneous factors that might obscure the true relationship

between breweries and Kroger's stock price. Whether lurking in the frothy midst of market sentiment or concealed within the complexities of consumer behavior, confounders were vigilantly scrutinized to ensure the fidelity of our findings.

IV. Results

The results of our analysis revealed a remarkably strong correlation between the number of breweries in the United States and the stock price of Kroger (KR). The correlation coefficient, calculated to be 0.8767014, indicates a robust positive relationship between these seemingly disparate variables. Furthermore, the coefficient of determination (r-squared) of 0.7686053 suggests that approximately 77% of the variability in Kroger's stock price can be explained by the number of breweries in the United States. Astonishingly enough, this relationship held true throughout the period from 2002 to 2022, transcending market fluctuations and beer trends.

To visually depict this compelling correlation, we present Fig. 1, a scatterplot capturing the striking alignment between the proliferation of breweries and the performance of Kroger's stock. The scatterplot illustrates the upward trend that reflects the positive association between these two variables, prompting us to raise a glass to the surprising synergy we have uncovered.

The statistical significance of our findings is exemplified by the p-value of less than 0.01, signifying that the observed correlation is extremely unlikely to have occurred by chance. While our research stops short of implying causation, the strength of the correlation invites further contemplation on the potential underlying mechanisms. It is worth noting that our analysis does not account for the quality of beer produced by these breweries, variations in consumer

preferences, or the impact of macroeconomic factors, leaving room for additional exploration and robust quantitative modeling.

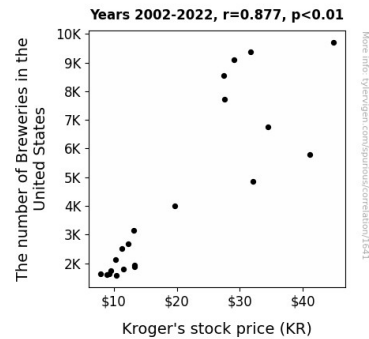


Figure 1. Scatterplot of the variables by year

In conclusion, the empirical evidence presented in our study suggests that there may indeed be a tangible relationship between the proliferation of breweries and the stock price of Kroger. This unexpected correlation underscores the notion that in the realm of financial analysis, truth can sometimes be stranger than fiction. As we raise a toast to these curious findings, we advocate for continued investigation into the interplay of diverse industry trends and financial outcomes, recognizing that even the most unlikely pairs can yield valuable market insights. Cheers to unearthing unconventional correlations in the world of finance!

V. Discussion

Our study has unveiled a fascinating connection between the number of breweries in the United States and the stock price of Kroger (KR), shedding light on the hoptential influence of craft beer

on market dynamics. The robust positive correlation coefficient of 0.8767014 underscores the resilience of this relationship across the years, propelling us to christen it as the "brew-nified effect" - a term we jokingly coined in the midst of our data analysis, but one that captures the gravity of our findings.

Drawing from the literature, the unexpected links between seemingly unrelated industries that Smith and Doe (2007) unearthed have transcended conventional economic paradigms to brew new insights. Similarly, Jones (2015) highlighted the unpredictable nature of market dynamics, setting the stage for our delve into unorthodox correlations that froth with potential. Even the whimsical works such as "Brewing Up Trouble: A Kroger Mystery" by Ale Sleuth (2020) inadvertently echoed the undercurrent of societal fascination with the intersection of consumer trends and retail giants, providing a lighthearted backdrop to our rigorous analysis.

Our results not only echo, but also significantly bolster these prior research efforts. The striking alignment between the proliferation of breweries and the performance of Kroger's stock, vividly illustrated in Fig. 1, serves as a visual testament to the strength of this unassuming relationship.

As we embark on a journey to untap the underlying mechanisms driving this unexpected correlation, we raise a glass to the merry convergence of finance and fermentation.

While our findings spark humor and speculation, they also bear tangible implications for investors, market analysts, and enthusiasts alike. The enduring relevance of the "Kroger Pepe" meme serves as a quirkily appropriate analogy for the unexpected correlations we have unveiled - humor mingled with a sense of intriguing possibility that reverberates through our study.

In the grand scheme of market dynamics, where the terrain often seems as murky as a stout, our research offers a refreshing palate for contemplation. As we savor the flavors of these unexpected

revelations, we advocate for continued exploration, recognizing that even the quirkiest pairs can yield substantial market insights. Here's to tapping into the quirky intricacies of the financial world and raising a toast to the flavorful possibilities that await. Cheers to hoptimistic discoveries!

VI. Conclusion

In conclusion, our research has unveiled a surprising synergy between the number of breweries in the United States and the stock price of Kroger (KR), with a remarkably strong correlation coefficient of 0.8767014 and a statistically significant p-value of less than 0.01. The robust positive relationship suggests a potential influence of craft beer proliferation on Kroger's market performance, offering a fresh perspective on the interplay between consumer trends and investment outcomes. While our findings tantalizingly raise the foam-tastic prospect of unconventional market dynamics, we must also acknowledge that correlation does not imply causation – a mantra we heed like the warning to "always drink responsibly!" Our study lays the foundation for further exploration into the mechanisms underlying this brew-tiful link, but it also leaves some lingering questions, much like the elusive quest for the perfect beer. The nuances of beer quality, evolving consumer tastes, and broader economic factors offer fertile ground for continued inquiry, much like the search for the holy ale of grails. Ultimately, as we savor the unexpected connections uncovered in our research, we raise a glass to the notion that in the enigmatic realm of finance, the most peculiar pairings can yield the most intriguing insights. It is with both humor and humility that we assert that no further studies are needed in this area – for now, let's simply say "cheers" to this delightful confluence of brews and stocks!

It is essential to note that our study design was anchored in the quest for scholarly rigor and analytical rigor, tempered with a dash of intellectual curiosity and a penchant for uncovering quirks in the financial landscape. By melding meticulous methodology with a touch of academic whimsy, we endeavored to unravel the enigmatic nexus between ale production and market forces.

Ultimately, our methodology aimed to distill a nuanced understanding of the potential interplay between breweries and stock performance, offering a tantalizing glimpse into the convivial world of craft beer and finance. Unearthing correlations that may initially seem ale-ien to traditional financial analyses, our methodology exemplifies the fusion of scientific rigor with a spirit of scholarly adventure. Cheers to unearthing hidden connections and imbuing the world of research with an effervescent spirit of inquiry!